## Space Weather Forecast

Issued on Wednesday, 08 May 2024 at 01:13 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Occasional Moderate flares expected with chance of isolated Strong flares. Slight chance of Minor geomagnetic storm intervals due to Coronal Mass Ejections (CMEs).**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity is Moderate. A large and complex sunspot region in the northwest of the visible disc has continued to produce numerous moderate flares in the last 24 hours. A second, larger region in the southwest is relatively less active, but has developed further with a complex magnetic configuration. These two groups are part of seven sunspot regions on the visible disc. The remaining sunspots on the disc are smaller, stable and magnetically simple. No significant Coronal Mass Ejections (CME) with an Earth bound component have been observed this period.

**Solar Wind / Geomagnetic Activity:** Solar winds were predominantly at slightly elevated to elevated levels resulting from the connection of a couple of coronal holes. Solar winds peaked at strong levels (602km/s at 07/0150 UTC). The Interplanetary Magnetic Field was at Weak levels throughout. The important north-south component was also weak. Geomagnetic activity was Quiet to Unsettled.

**Energetic Particles / Solar Radiation:** Solar radiation was at normal background levels.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Moderate to High solar activity is forecast with occasional Moderate flares expected and a chance of isolated Strong flares, principally from the large sunspot regions located in the northwest and southwest of the visible disc.

**Solar Wind / Geomagnetic Activity:** There remains a number of potentially Earth-directed CMEs in the forecast period, and confidence is low due to a lack of solar imagery in recent days. Of these, the majority, if not all are expected to pass above or below Earth orbit, most likely limiting any impacts to glancing blows. Earth is under the influence of a HSS (High speed stream) from a couple of coronal holes and expected to peak at elevated levels on Day 1 (08 May) before slowly declining between Days 2-4 (09-11 May) towards slightly elevated or Low levels.
Geomagnetic activity at Quiet to Unsettled levels through the period, with a slight chance of Minor Storm intervals on all days, given the potential for peripheral CME enhancements.

**Energetic Particles / Solar Radiation:** Solar radiation levels are most likely to remain at background levels through the period. There is a slight chance for a Minor Storm or greater event occurring throughout, from the two large sunspot groups in the western hemisphere of the visible disc.

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Met Office

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 20 | 10 | 10 | 10 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | Yes | 95 | 95 | 90 | 90 |
| Very Active | R3 to R5 X | No | 40 | 30 | 30 | 20 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 25 | 25 | 30 | 30 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

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